THE VETERINARY RECORD

A Weekly Journal for the Profession.

Edited by William Hunting, F.R.C.V.S.

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Too True.

The Editor of this paper a little while ago went down into Norfolk with a client to assist in the purchase of horses. After a morning's work they entered a comfortable looking hotel with the object of securing luncheon. In the coffee room was a gentleman gathering up his belongings preparatory to leaving. The Editor noticed that among other articles he threw into his Gladstone bag was a copy of *The Chemist and Druggist*. The gentleman was affable, and apparently no stranger to the place. He said "Good morning," made a remark or two about the weather, and by the time the visitors had drawn up to the table conversation was in full flow. How exactly it came about is not remembered, but in reply to a remark of the Editor's that "*The Chemist and Druggist* is a wonderful trade journal" the gentleman said "Yes, it is well conducted," and then the conversation ran something in this form :—

"Every trade or calling nowadays requires its organ in the press, in fact a public individual of any importance must have his own news-sheet."

"Yes, the press is a great power when properly used. *The Chemist and Druggist* is a good trade journal, but if you want the first class article look at *The Lancet* and *The British Medical Journal*. They are not only successful but they are so well done—so well written. I often wonder the veterinary profession has not a good special organ.

"Oh, I rather think they have. At any rate they have a very good 'quarterly' and I believe two monthlies."

"I meant a weekly. You want a paper that appeals to its readers frequently—that draws attention whilst the subject is fresh and new."

"But I rather think they have a weekly paper of some kind."

"Oh you mean that wretched *Veterinary Record*. I should hardly count it among professional periodicals."

"Well, I know it's not much of a paper, but the veterinary profession is only a small one and cases and articles of interest are not plentiful."

"That's all very well, but if a thing's worth doing at all it's worth doing well."

"Certainly that is so, but the little paper cannot afford to keep an Editor. I suppose it is run by a man who has his daily practice to attend, and who only devotes his spare moments to the paper."

"Very likely, but that is no excuse for the profession having such a rag as its weekly organ. It ought to have something better. But, gentlemen, I must go. I have a train to catch to East R——."

"East R——, why I know a gentleman there, a Mr. B——, perhaps you know him?"

"Know him—yes, well. I hope to see him this afternoon. Good day, gentlemen."

With this our friend made for the door with his bag in one hand and umbrella and coat in the other. Reaching the door he turned and said—"Oh, pardon me, if I see Mr. B—— who shall I say was asking after him."

"Tell him the Editor of *The Veterinary Record* desired to be remembered to him."

The look on the gentleman's face, as he dropped his bag and began to stammer an apology, was a thing to be remembered, and the Editor could only deprecate any apology by confessing the criticism was too true.

A CASE OF INTUSSUSCEPTION.

By R. Porch, F.R.C.V.S.

The horse was taken ill with signs of abdominal pain whilst at work. He was walked home some distance to the stable where the following symptoms were observed. He would lie quietly for as long as 20 or 30 minutes, then would show signs of violent pain by kicking and struggling, rarely he would rise to his feet.

These symptoms continued for about 18 hours, the horse lying continuously during the last six. The pulse was quick but strong for the first 8 hours, gradually getting weaker. The breathing was hurried and irregular. The mucous membranes were very much injected. There was no tympanitis

The post-mortem examination revealed a curious condition of the small intestines. Instead of the usual free coils there was a mass about 18 inches high by 10 inches diameter which consisted of a spiral coil as firm to the feel as a large sausage. This mass might be described as resembling well-filled intestine tightly coiled in spiral form around a central axis. When removed from the abdomen the mass stood firmly as it was placed on end. Two men then grasped each end and withdrew a portion of intussuscepted intestine measuring 26 feet. There was no ingesta in the gut but a quantity of sanguineous fluid, and the mucous membrane of the inverted portion was thickened and much discoloured.

The symptoms shown by the horse are only one more instance of the difficulty in diagnosing such abdominal lesions as produce pain and cause death. The lesion is in my experience unique, and I regret I was unable to obtain a photograph.

IMPACTION OF THE SINGLE COLON.

By E. Wallis Hoare, F.R.C.V.S.

Subject.—A valuable hunter, nine years old.

Previous History.—Healthy.

Clinical History.—According to the attendants the animal was found in pain on March 19th, and no professional assistance was sought. The pain was described as intermittent and very severe, coming on at short intervals. Some patent preparation had been administered.

On attendance on the morning of March 20th I found the animal showing evidences of having been affected with severe pain, as there were abrasions about the hips, hocks and eyebrows. I was assured that the bowels had acted naturally.

On watching the patient for a short time he was attacked by one of the fits of acute pain, lay down, groaned, struggled with fore and hind limbs, looked towards the flanks, and after a short time got up and appeared easy. I was informed that the previous night these attacks were very frequent, and accompanied by pawing, and the state of the wall of the front of his stall proved the veracity of the latter statement. The pulse gave no cause for anxiety, the respirations were only slightly increased, the temperature 101, no tympanitis present, visiole mucous membranes slightly injected.

An anodyne draught composed of Tr. opii ʒij : spts. æth. nit. ʒij : ol. lini Oj. was ordered to be given if an attack of pain was persistent; an enema of warm water was administered, and no solid food allowed, simply thin oatmeal gruel which the animal partook of at intervals.

In the evening the attendant called and stated that the attacks of pain were violent during the day and the anodyne draught had been administered. This gave relief and the patient was quiet. A similar draught was left for the night in case the pain became severe and prolonged.

March 21st.—Animal said to have been in great pain during the night and the second draught was administered. She is now quiet, but there has been no action of the bowels. Gave Calomel ʒij : ol. lini. Oj. also enema which was not retained. Animal takes the thin oatmeal gruel, and at times shows signs of uneasiness, pulse quicker, temperature 101. Rectal examination showed nothing special, no abnormal distention of double colon; no tympanitis present. Prescribed one drachm doses of ext. belladonnæ, only to be given if pain was severe and prolonged.

March 22nd.—No action of bowels, temperature 103, pulse weaker, several attacks of pain reported by the night attendant. Frequent twitching of tail, turns head towards each flank, occasionally paws. Gave enema of glycerine with long rectum tube, but it was only retained a short time. Gave calomel ʒj : ol. lini. Oj.

March 23rd.—No action of bowels, and on auscultation no intestinal murmurs to be detected. No pain, pulse weaker, animal is disinclined to move in the stall. Used long rectum tube which was passed its entire length, viz. 6ft., and endeavoured to propel the warm water along the intestine, but it was not retained. In the evening used tube again, but it was quite evident that some obstruction was present in the intestines as the fluid was not retained. Injected half a gallon of raw linseed oil with the tube, this was retained for a short time but produced no effect. Administered calomel ʒij : ol. lini. Ojss.

March 24th.—No action of bowels, animal very weak, takes oatmeal gruel very slowly, stands immovable in the box, sweats in patches over the body, but there is no pain. No tympanitis, but abdominal region feels hard. The animal died during the day.

Autopsy—March 25th.—A remarkable feature is the absence of tympanitis, the abdominal cavity not being distended nor the intestines. On opening the abdominal cavity the intestines showed no tendency to protrude as is usual; the small intestines were practically empty, the large colon was full of fluid ingesta of a creamy consistence and very pale yellow in colour; no enteritis in this region. The cæcum was distended with fluid and seemed to contain a large quantity of the linseed oil that had been given. The small colon resembled a large German sausage, being distended with dry ingesta from its commencement in the large colon for about four feet. A small rupture was here detected, but from the appearances of the edges and the ingesta not being disturbed I regarded it as having occurred post-mortem. There was a limited amount of inflammation of the mucous membranes of the small colon. The liver was of a whitish yellow colour, very small in size, and looked as if it had been boiled for a long period. I sent a portion of this organ to Prof. Mettam, who reported that it was fatty and atrophied.

Remarks.—First, as to errors in treatment. No opiates should have been administered as they certainly, in such a condition, only increased the paralysed state of the small colon.

Next, would the administration of eserine have overcome the four feet of obstruction in the intestine? This is doubtful. If it had not succeeded rupture of the intestine would probably have been the result.

The doses of calomel may be considered large, but the condition of the large colon showed that no irritant action had been produced. One thing is clear, viz, that both the calomel and the raw linseed oil failed to have any effect on the obstruction. Would aloes if given early have succeeded? This is also doubtful.

The long rectum tube, although used frequently and diligently, also failed to overcome the obstruction. Had the patient been in my own infirmary I should certainly have attempted laparotomy. The question would be how to remove such a large quantity of ingesta; evidently more than one incision in the intestine would have been necessary.

Then we have the diseased liver to deal with. Strange to say no symptoms of liver affection were observed during life, probably if they were present they would not have been ascribed to this organ.

The absence of tympanitis in this case is worthy of attention; to explain its absence is beyond my intelligence.

Had the obstructed portion of intestine been closer to the rectum there would have been some chance of

the long rectum tube being of service. But the average length of the rectum being taken at two feet and that of the small colon at ten feet, prevented the six foot tube coming sufficiently close to the obstruction to bring about its removal.

We learn from errors in treatment as much, if not more than from successful cases. The autopsy showed only too clearly how useless were the means adopted to overcome the obstruction. While conducting the autopsy and reviewing the actual state of affairs that existed, my firm resolution at 6.30 a.m. on the morning of March 25th was to give the treatment recommended by Mr. Reeks a trial in future.

On a tree immediately overhead a solitary magpie was busily chattering, and, regarding the carcass with a knowing look, seemed to say,

"Tis easy to be wise after the event."

ABSTRACTS FROM FOREIGN JOURNALS.

Cocaine and Diagnosis.

Rabuenfnehrer has noticed 180 cases of lameness of difficult diagnosis to which he has injected cocaine along the course of the nerve (collateral, tibial, deep peroneal, etc.), but in hock lameness he had not met with unqualified success in its use. He recommends sterilising and warming the solution used. The minimum dose for each nerve is 0·25 gram against a maximum of 0·5 gram.

Eberlein warns us of a complication sometimes met with and recomends cocaine injections to be used with caution, as owing to the analgesia fracture of the pastern may, and does, fairly frequently result.—Ex. *Deutsch. Thierärzt Wochen.*

F. E. P.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

HÆMOGLOBINURIA.

By Professor Wortley Axe.

Presented at the Meeting on Thursday, March 26th.

It is now twenty years since I first endeavoured to throw some light on the subject to which I am about to ask your attention to-day, and my reason for returning to it is not that I have anything of importance to add to our present imperfect knowledge of its pathology, but rather to collate the facts and observations which have since been made, and to bring the disorder in some of its bearings briefly under review.

As I propose to repeat an objection to the term originally applied, and still applied to this affection, it is needful that I should say something of azoturia as it is known in man.

Here it is defined as "a condition in which the excretion of urea is excessive in proportion to the weight of the body." It is then pointed out that "excessive excretion of urea, both absolute and relative to the amount of urine, may occur for a time in comparatively healthy persons without any abnormal symptom whatever, in others, however, such an excess of urea is associated with gastro-intestinal derangement and nervous symptoms, the patient complaining of acidity and flatulence but not of thirst or excessive appetite. There is langour, fatigue after slight exertion, bodily or mental, nervousness, restlessness at night, dull pain in the back, and sometimes irritation at the neck of the bladder with constant desire to pass water. The treatment consists in ordering nutritious diet, with a large proportion of farinaceous constituents, moderate exercise, avoidance of fatigue, mental or bodily, purgatives, alteratives, and opium."

Clearly azoturia, as understood in the sister profession, is a disorder of an abiding nature, with which it would be idle to attempt to assimilate the disease so described in the horse, seeing that the main features of the latter are entirely absent in the former. In azoturia of man there is no discolouration of the urine, no muscular spasm or paralysis, no asphyxia or diaphoresis, no albuminous urine; indeed, as I pointed out 20 years ago, there is an entire absence of everything of predominating importance to the assimilation of the two affections.

Haycock, who first called attention to it in this country, was led to regard it as a form of hysteria from the fact that in his experience it had usually appeared in mares, but beyond this there does not appear to have been any reason for such a diagnosis.

The late Professor Dick was wont to speak of it as a sprain of the psoas muscles, and although this definition of the ailment was in no sense an expression of its pathology; serious lesions affecting these organs are certainly elements in the morbid anatomy of the affection.

The late Professor Williams, whose name we all revere and whose works are a monument to a great and useful life, was the first to formulate a theory of the pathology of this disease.

In his able work on the Principles and Practice of Veterinary Medicine he observes in this connection, "It is in my opinion a hypernitrogenous condition of the blood and system, generally due to overfeeding and want of exercise; the *excessive* secretion of urine and excretion of urea being physiological results due to the presence of effete products—metamorphoses of nitrogenous food in the blood. . . . . It seems necessary," he adds, "that some degree of muscular exertion be performed, and the only way in which I can account for this is that the blood before exercise contains a superabundant quantity of albumen unappropriated by the tissues and that the exercise, by increasing the rapidity of the circulation and of the respiratory movements, induces a rapid oxidation of such superabundant albumen whereby it is transformed into urea, hippuric acid, etc., with which the blood becomes overloaded and the kidneys stimulated to excrete what is proving deleterious."

In this part of the proposition I join issue with the writer, and I repeat what I said in 1883 that "this view of the pathology is clearly based on the the theory that the formation of urea is increased by physical exertion, and that the *circulatory albumen* undergoes direct oxidation, both of which conclusions are directly opposed to the teachings of physiology. Moreover the statement that the phenomena exhibited during the course of the disease are the outcome of a superabundance of urea in the blood stands confronted by overwhelming evidence to the contrary. In this connection we have the experiments of Bichot, Gaspard, Todd, Vanquelin, Frerichs and others, all of which concur to show that the serious toxic consequences once attributed to the presence of urea have no foundation in fact, but granting for the sake of argument that the case were otherwise, is it consistent with what is known of the formation and elimination of urea that in the brief period of time which elapses in these cases between the commencement of physical exertion and the outbreak of the disorder such an amount of this compound can be formed and accumulated as to prove destructive of life in the presence of uninterrupted renal activity.

The observations of the late Professor Robertson are much to the same point. He says: "Azoturia is dependent on the existence in the blood of certain noxious materials which from some disturbance have remained

unbroken up and unremoved, or which have resulted from peculiar changes of received or existing elements; the cause of the existence of this deleterious agent, whatever it may be, does not in any case appear to be resident in the kidneys, but is clearly one of assimilation in some of its complex processes, and is undoubtedly intimately associated with a form of mal-nutrition with the entrance into the system and into the blood of material highly charged with the materials or power of determining or forming azotised or nitrogenous compounds.

Although, as has been observed, these two references are much to the same point they are by no means identical, and will not bear the same interpretation, one is clearly stated and admits of no misunderstanding, a superabundance of albumen in the blood unappropriated by the tissues, is, according to this observer "rapidly oxidised and transformed into urea and hippuric acid with which the blood becomes overloaded." The other, while being suggestive, is at the same time too obscure and general in its terms to furnish ground for controversy.

Then, gentlemen, there is the view which refers it to an abnormal development and discharge of muscle acid, and a breaking down of red corpuscles as the result of its destructive action upon them. If this be the correct explanation then the number of the corpuscular elements should be greatly diminished, but we are assured to the contrary, and in explanation of the discrepancy it is asserted that they were at the onset of the disease in numerical excess.

Disintegration of muscle and the escape of muscle plasma into the blood current is considered by some a sufficient explanation of the clinical phenomena observed, as well as the altered condition and composition of the urine.

These diverse views serve to show that a rational solution of the question involved in the pathology of hæmoglobinuria is for the present at least an impossible task, and calls for the earnest co-operation of all engaged in the field of pathological research. In this connection it is above everything else desirable that opportunities of adding to our present small stock of knowledge should not be thrown away in the future as they have been in the past.

In the controversy which has so long lingered round the condition and composition of the urine in hæmoglobinuria many of you will have observed how difficult it has been to reconcile the teachings of our text books with our hospital experiences, and before any solid foundation can be raised on which to rear a solid superstructure these discrepancies must be disposed of. In this regard it is of the first importance to consider the normal composition of the urine, and for this purpose I have brought together a number of analyses at the bottom of each of which will be found the percentage of urea.

Analysis of the Urine of the Horse in Health.

Tuson.

Proportion of Urea,	1st sample	11·9	per 1000
"	" 2nd "	12·4	"
"	" 3rd "	11·38	"

Per Cent. 1·19 : 1·24 : 1·13.

Bausingault.

Water and undetermined matters	910·76
Urea	31·00
Hippurate of Potash	4·74
Lactate of Potash	11·28
" Soda	8·81
Bicarbonate of Potash	15·50
Carbonate of Lime	10·82
Carbonate of Magnesia	4·16
Sulphate of Potash	1·18
Chloride of Sodium	·74
Silica	1·01
Phosphates	absent

Percentage of Urea 3·1

Von Bibra.

	Sample I.	*Sample II.*
Water	885·09	912·84
Solids	114·91	89·16
Urea	12·44	8·36
Hippuric Acid	12·60	1·23
Mucus	0·05	0·06
Alcoholic Extract	25·50	18·26
Watery Extract	21·32	19·25
Soluble Salts	24·40	
Insoluble Salts	18·80	

Percentage of Urea 1·2 : Percentage of Urea ·8

Talkowski.

Water	3·5 pints.
Organic Solids	6·25 oz.
Ash	1·60 oz.
Urea	3·25 oz.
Ammonia	5·53 grs.
Hippuric Acid	·49 oz.
Phenol	37·89 grs.
Organic Sulphur	208·69 "
Inorganic Sulphur	8·577 "
Phosphoric Acid	3·40 "
Lime	88·50 "
Sodium Chloride	·87 "

Proportion of Urea 4·57 per cent.

Smith.

Mean Composition of the twenty-four hours Urine of Horses at rest and at work.

	Rest.	*Work.*
Quantity	8·689 pints	7·877 pints.
Specific Gravity	1·036 "	1·036 "
Total Solids	8·114 oz.	8·188 oz.
Organic Solids	5·155 "	5·368 "
Inorganic Solids	2·94 "	2·820 "
Urea	3·4744 oz.	
Ammon. Carbonate as Urea	·4626 "	
Ammonia	·887 "	·187 "
Benzoic Acid	·23 "	·549 "
Hippuric "		
Phosphoric Anhydride	·046 "	·067 "
Sulphuric "	·375 "	·539 "
Other Sulphur Compounds	·258 "	·271 "
Chlorine	1·118 "	·775 "
Calcium Oxide	·121 "	·067 "
Magnesium Oxide	·105 "	·093 "
Potassium "	1·290 "	·954 "
Sodium "	·088 "	·064 "
Urea 2·02 per cent.		*2·84 per cent.*

Fourcroy and Vanquelin.

Urea	0·7
Hippurate of Soda	2·4
Carbonate of "	0·9
Chloride of Potassium	0·9
Carbonate of Lime	1·1
Water with Mucus and Acid Fat	94·0

Urea 0·7 per cent.

Simon.

In the urine of a horse analysed by Simon the solid constituents amounted to 10·7 per cent. of the urine, and the urea to 5·06 per cent.

Veterinary-Captain Smith in his work on Veterinary Physiology remarks that the urea of the horse varies between 3 per cent. and 4 p. c., but in reporting on two cases (*Proceedings of National Veterinary Association*, 1892) in the practice of Mr. F. Wragg one of which contained 4·3 parts of urea in every hundred, the same authority points out that this quantity represents double the normal proportion. Unless I have made some mistake this discrepancy requires some explanation.

From the above analyses it will be seen that urea as it exists in health is liable to great variation.

In the eleven analyses set out above the highest percentage is 5·06, the lowest 0·7 and the mean of the whole gives us 2·17.

I do not propose to enter into the vexed question of the production of this substance, but in view of observations which I shall presently make it may be desirable to briefly note the views which now hold the field as to the source whence it is derived.

Urea we are told is a final product of the disintegration of the living solids, and may be in some measure also of the proteid principles of food in the course of their conversion into assimilable matter.

It is not believed that this transformation of food and flesh into urea is effected directly, but that the conversion of the one into the other is reached through the formation of a variety of intermediate compounds.

We are assured that no urea is to be found in muscles, but that they are constantly pouring into the blood stream a nitrogenous substance which is capable of being converted into it. As creatin answers to this description and is always found in muscles it is assumed that this is one of the intermediate compounds out of which urea is ultimately developed. Whether creatin or any substance arising out of it is concerned in the production of hæmoglobinuria it is impossible to say, but it is difficult to overlook the fact that the origin of the disease is intimately connected with locomotion, and that the muscles are among the organs manifesting early functional disturbance and later, structural change. Add to this the toxic character of the affection and the suddenness of its onset, and it becomes permissible to suggest the possibility of a sudden liberation from the muscles of some poisonous compound stored up in them during the period of rest which invariably precedes the attack.

I now submit for comparison a series of incomplete analyses of urine from animals affected with the disorder in question.

Analyses of Urine in Hæmoglobinuria.

Case I.—Prof. Tuson.

Proportion of chief constituents in 1000 parts:

Water	969·64
Urea	11·59
Ash	4·61
Hippuric Acid Extractives, Blood and other matters	14·16
	1000·00

Percentage of Urea 1·159.—(Axe, *Veterinarian* 1883.)

Case II.

Williams.

The last case I have seen and now under treatment furnished the following results from 1 ounce of urine or 480 m.

Albumen	1·31 gr.
Urea	56·91 gr.

Percentage of Urea 11·9.—(*Veterinarian*, 1884.)

Case III.

Mr. Greig.

Specific Gravity	1·041	
Urea	44·05	grams per oz.
Albumen	·94	per cent.
Sugar	·12	,, ,,

Percentage of Urea 9·16.

Proceedings National Veterinary Association 1892.

Walley.

In azoturia not only is there hæmoglobinuria, but in addition the urine is loaded with urea and biliary matters.—*Veterinarian, 1884.*

Case IV.

Professor Cooke.

Analyses of fourteen samples of urine at the Glasgow Veterinary College.

Sample	Date	Solids p/c.	Spec. Gravity	Urea p/c.	Albumen p/c.	Reaction
1	Feb. 22	7·4	1·031	1·40	1·88	Alkaline
2	,, 22	9·4	1·037	3·02	1·24	,,
3	,, 23	9·0	1·034	3·94	·61	,,
4	,, 24	6·84	1·028	3·00	·152	,,
5	,, 25	7·45	1·034	1·83	·137	,,
6	,, 25	9·96	1·040	2·29	·280	,,
7	,, 26	7·21	1·037	1·13	·155	,,
8	,, 27	8·84	1·036	1·84	·156	,,
9	,, 27	8·67	1·037	1·08	·181	,,
10	,, 28	8·28	1·044	1·52	·014	,,
11	,, 28	6·16	1·035	1·02	·026	,,
12	,, 29	6·60	1·033	1·51	·008	,,
13	Mar. 1	7·23	1·033	1·65	·045	,,
14	Apl. 2	7·25	1·035	1·84	none	,,

Case V.

Professor Cooke.

Sample,	Date	Total Solids	Spec. Gravity	Urea	Albumen	Reaction
1	Apl. 6	10·44	1·042	1·38	2·20	Alkaline

Died a few hours after the attack.

Case VI.

Professor Smith, M.R.C.V.S.

Organic matter	9·428	per cent.
Inorganic	·982	,, ,,
Water	89·580	,, ,,
	100·00	

Specific gravity 1·040 reaction alkaline. Every hundred parts contained 4·3 parts of urea. Urine secreted two hours after the attack.—*Proceedings National Veterinary Association 1892.*

Case VII.

Professor Smith, M.R.C.V.S.

Organic matter	2·467
Inorganic	1·248
Water	96·285
	100·000

Specific gravity 1·020; reaction alkaline; every hundred parts contained 1·984 parts of urea and it reduced a salt of copper; urine secreted 24 hours after the attack. —*Proceedings of the National Veterinary Association 1892.*

Case VIII.

Professor Bayne.

Percentage of urea	Sample	1*a*—1·96
	,,	2*a*—2·05
	,,	3*a*—2·43
	,,	4*a*—2·03
	,,	5*a*—1·89

No time stated when urine discharged.

Case IX.

Professor Bayne.

			Sp. Gr.	Reaction
Percentage of urea	Sample	1—3·11	1·40	Alkaline
	,,	2—2·57	1·40	Alkaline
	,,	3—2·09	1·18	Slight ac.
	,,	4—1·35	1·10	Neutral
	,,	5—1·01	1·10	Neutral

No time stated when urine discharged.—*Proceedings of the National Veterinary Association 1893.*

Turning to another aspect of this secretion it has been affirmed and re-affirmed by veterinary writers that in every case the specific gravity is much increased, and recently this imaginary condition has been referred to the hæmoglobin excreted by the kidneys.

Many years ago I took objection to this statement on what appeared to me ample evidence to the contrary, and the more recent observations of others have confirmed the conclusion at which I then arrived.

It is perfectly true to say that albumen raises the specific gravity of urine with which it may become incorporated, but this is not necessarily the case, since the absence of other solids may neutralise the effect of the albumen existing in it, and we long since expressed the opinion that the calcic carbonate was excreted in smaller proportion.

	Highest	Lowest
In six cases which came under my notice :	1·040	1·015
Greig found it to be	1·041	
In 14 analyses by Cooke	1·044	1·031
In five analyses by Bayne	1·40	1·10
In two „ „	1·040	1·020

Of the 25 observations here referred to, 11 were over the mean density (1·036), 12 were under the mean, and one at the mean. Whatever importance therefore may attach to this branch of the subject there can no longer be any doubt as to the specific gravity of the urine in this disease falling within the extremes of normal variation.

Urea.

This is a normal constituent of the renal secretion but subject to considerable variation, depending chiefly upon the amount of proteid food ingested. It will also vary with the degree of concentration in which the secretion exists. Reference to the appended analyses shows the variation to range between ·07 and 5·06 and the mean to be 2·11

In the disease in question the highest percentage recorded was 11·9 and the lowest 1·01 ; the mean of 29 observations being 2·63. The mean excess in disease over the standard in health is ·46 per cent.

Albumen.

The abiding presence of albumen in the urine is an indication of disease. For a long time its absence in hæmoglobinuria was affirmed by our chief veterinary writers, but it is now recognised as an invariable constituent.

"Serum albumen and serum globulin," says Captain Smith "are both represented, the latter in smaller proportion than the former."

From the few data available it would seem that this morbid constituent exists at its maximum in the discharges emitted at the outset of the disorder, and then more or less gradually disappears. In Professor Cooke's analyses it is found up to the ninth day, fluctuating in the meantime within rather wide extremes.

Williams affirmed that the solidity which followed the addition of nitric acid to urine was not due to coagulation of albumen but to the precipitation of crystals of nitrate of urea, and Robertson entertained the same view and averred that the absence of albumen was confirmed by the non-coagulation of the liquid on the application of heat.

Sugar.

Professors Williams and Walley, and Captain Smith have all met with instances where sugar existed in the urine. This point has not, I think, received the attention it deserved, and should be borne in mind in all future enquiries.

Proportion of Solids contained in Healthy Urine

Von Bibra	(1)	11·5 per cent
„ „	(2)	8·9 „ „
Smith		4·7 „ „

Mean 8·3.

Total Solids in Urine of Horse affected with Hæmoglobinuria.

Case 1

In a series of 14 analyses Cooke found the
highest to be 9·96
lowest „ „ 6·16

Case 2

One analysis by the same. 10.44
Urine discharged immediately after the attack.

Case 3

Smith found total solids to be 10·410
Urine discharged two hours after the attack.

Case 4

Total solids 3·715
Urine discharged twenty four hours after the attack.
Mean 8·137.

Spectroscopic Analysis.

Spectroscopic analyis has demontstrated—as I predicted in 1883 it would—that the discolouration of the urine is due to the escape of the hæmoglobin of the blood. At the date referred to I wrote, "My own observations and experiments lead me to a very definite conclusion, namely, that the morbid hue of the urinary secretion is due to the colouring matter of the blood. . . . . This conclusion has been forced upon me by every appropriate chemical test, and considerable support has been given to it by finding iron in the urine, and I make no doubt that spectroscopic analysis will confirm the result at which I have arrived. If this be true, as I believe it to be, then we have distinct evidence of hæmal changes. Whether these changes refer to an actual solution of the red corpuscular elements or to a morbid diffusability of the hæmoglobin remains to be shown"—and it still remains to be shown.

One of the most interesting features of this disease is the relation of the percentage rate of urea to albumen at the onset of the attack and in the course of its progress. It is unfortunate that we have so few data in this connection to appeal to, but the very excellent series of analyses reported by Professor Cooke, of the Glasgow Veterinary College, to the National Veterinary Association in 1892, are very suggestive as to the line which future enquiry should take.

Professor Cooke deals with urine from two cases of the disease, one which occurred in the practice of Messrs. Greaves & Faulkner, of Manchester, and the other in that of Professor McCall. In connection with the former fourteen analyses were made, commencing on the day of attack, Feb. 22nd, and continuing day by day up to March 1st, and again on April 2nd. It will be seen by reference to the table annexed that the first sample of urine examined contained 1·40 per cent of urea and 1·88 per cent of albumen. At that time, when the disease had become established, the urea was practically in normal proportion while the albumen had reached its highest incidence. It is further noticeable that from this time the urea increased in amount reaching its maximum (3·94 per cent) in the third sample on the second day, when the albumen had sunk to ·61.

Professor Cooke's second case (analysis 15) occurred in an animal that "died a few hours after the attack so that only one sample was examined." Here again the urea and albumen are found to exist in similar relation to each other, the former being present in normal amount (1·38 per cent) while the latter reaches as much as 2·20 per cent.

In a further report on Azoturia by Mr. Wragg to the National Veterinary Association in 1893, a series of five analyses by Professor Bayne are recorded. In the first sample of the series the percentage of urea is 1·96, from

which amount it rose to 2·43 in the third sample and then steadily declined. It is unfortunate that no mention is made of the percentage of albumen in the specimens examined.

In 1863 Professor Tuson analysed a sample of urine for me removed from the patient half-an-hour after the attack with the following result:

Proportion of Chief Constituents in 1000 Parts

Water	969·64
Urea	11·59—1·159 per cent.
Ash	4·61
Hippuric Acid	—
Extractives	—
Blood and other matters	14·16
	1000·00

In this case the percentage of urea, as in the cases above referred to, was not in excess of the normal proportion.

If this relation of urea to albumen in the initial and progressive stages of the disease is typical of its course, and there appears to be some facts which seem to support it, then an important step will have been advanced towards a solution of its pathology. It points to the conclusion that excess of urea is not primarily the disturbing factor, and the observed increase would seem to be the consequence of an antecedent blood change to which the hæmoglobinuria is due. This, however, is a conclusion which in the present conflicting state of our knowledge cannot be finally accepted, but must nevertheless be kept in view pending further and more systematic analyses.

Against it we have Case VI reported upon by Professor Smith (*Proceedings of the National Veterinary Association*, 1892) in which 4·3 per cent. of urea was found in urine secreted two hours after the attack, but which may not have been the first quantity discharged.

In Case IX., again, the first sample reported upon by Professor Bayne was found to contain 3·11 per cent., but there is no statement as to the time which elapsed between the onset of the disease and the discharge of the urine.

In presenting to you these facts and figures I am simply desirous of giving prominence to the point which may or may not be important—that in the earlier cases referred to above, the urea in the *first* samples of urine analysed after the attack the percentage of urea is normal, while in the cases where the quantity of albumen was also estimated it was found to be at its maximum. Thus Case IV: urea 1·40 per cent., albumen 1·88 per cent.; Case V.: Urea 1·38 per cent.; albumen 2·20 per cent.

These of course may be mere coincidences but in the unravelling of such obscure pathological problems as the one before us to-day it is desirable that every item in the account should be scrupulously examined, and either affirmed or refuted.

The history of animals which become subjects of this disease is too well known to each and all of you to need description. They have passed the adult period of life, they are in robust health, receiving full rations of highly nitrogenous food, and performing regular and forced labour. They are indeed in what would be termed *high condition*, and so long as food and work are duly apportioned the balance of health continues to be maintained. How near that balance is to being upset is shown by the apparently harmless nature of the incidents which almost invariably precedes the attack.

A brief rest of two or three days or a week with a continuance of the working allowance of food is in the experience of all of us the predisposing factor in the case.

The onset of the affection is not marked by any premonitory indications; on the contrary, prior to the attack the animal is generally spoken of "full of life and spirits" and yet all that is needed to convert this condition of apparent health into a destructive disease is to call into play for a few minutes the muscles of locomotion. The attention is naturally arrested here, and we are led to ask in what way have these brief periods of rest and work become antagonistic to health. Is it the outcome of the simple alternation of these two conditions, or is there a third and fundamental factor in the high state of bodily health and condition in which the animal is at the time.

We know that horses in moderate condition rest and work with impunity, and it is difficult to resist the conclusion that the susceptibility of the individual to this disease is brought into existence by the faculty which he has acquired of storing up energy-producing materials in reserve, which if not drawn upon by the demands of labour, and set free through the ordinary channels as ordinary waste, accumulate in excess and in some inscrutable way which we cannot at present formulate produce their pernicious effects. I know this does not advance the question of the pathology of hæmoglobinuria one step, but it may provide a working proposition for your adverse criticism.

The sudden and severe onset of the disease following upon a short spell of work is a point full of interest and forces the conclusiou of some intimate causative relation between the one and the other. What the nature of that relationship may be it is impossible to say. It is, however, certain that the mere act of movement could not in itself bring about such a result, and without it the result does not occur What then is the co-related factor that muscular action sets in motion to produce what would appear to be a toxic explosion.

Do they during the brief rest which precedes the outburst store up some harmless substance which is ordinarily exhausted by work but when accumulated in excess and kept too long in reserve passes into one of those intermediate products of destructive assimilation to be thrown into the blood current during the renewed activity of the muscles. To complete the *rôle* it would of course require that the nature of the material so formed should act upon the corpuscular elements of the blood in such way as either to effect their solution or cause a high diffusibility of the hæmoglobin they contain.

That the blood corpuscles undergo some such change seems obvious, not only on account of the discolouration and composition of the urine, but likewise from spectroscopic analysis, and that marked clinical phenomenon which to a greater or less extent is always present—embarassment of the breathing.

Having regard to the fact that the red corpuscles are the medium by which oxygen is supplied to the body in the course of respiration, difficulty in breathing would naturally follow upon any damage they might suffer which occasioned their destruction, or a morbid diffusion of their hæmoglobin, and I think this taken in connection with the points above referred to lends considerable support to the view that the action of the poison whatever it may be, and wherever it may come from is specially marked upon the red corpuscles.

It would occupy too much of your time to enter fully into the morbid anatomy of this affection. Speaking generally it is of the type of septicæmia. There is one point, however, to which I should like to refer, viz., the conditions of the voluntary muscles and especially those of the posterior regions of the body—the psoas muscles in particular. These are pale in colour, soft, always more or less œdematous, frequently swollen or enlarged by serous infiltration and sometimes present patches of pale-reddish discolouration.

In one case the psoas muscles were found to contain 70·7 per cent. of water, while the corresponding muscles in health contained 50·37 per cent. In the diseased

specimen microscopic examination showed the striæ to be indistinct or altogether obliterated in parts, and generally to be more or less obscured.

In animals which recover from the immediate effects of the disease the muscles waste, and when examined after death exhibit coincident changes the chief of which are a more or less granular and cloudy condition of some of the fibres, reduction, or complete removal of sarcous matter from others, leaving only the sarcolemma with some white cells to mark their former presence.

I ought perhaps to say that the œdema referred to above is not confined to the muscles but is observed to a greater or less extent in all the solid organs. An estimate made of the amount of moisture contained in the hepatic tissue of a horse suffering from hæmoglobinuria as compared with that found in health gave as the result 64·5 per cent. in the former and 44·2 per cent. in the latter.

In conclusion I need hardly point out how little satisfaction there is to be found in the facts here collated. They lead us to no definite conclusion, but they may nevertheless point the way to the acquisition of fresh knowledge out of which a more concrete and comprehensive view may render an exact and rational definition of the pathology of this ailment possible in the near future.

NORTH OF ENGLAND VETERINARY MEDICAL SOCIETY.

The annual meeting was held at the Douglas Hotel, Newcastle on Tyne, on Friday, February 27th, 1903, the following members being present: Messrs. G. Craik, Alnwick, (president); G. Elphick, W. Hunter, J. Davidson, W. Dotchin and H. S. Elphick, Newcastle-on-Tyne; J. Aitken, Chester le Street; G. R. Dudgeon, Sunderland; A. Gofton, North Shields; W. Lawson, Rothbury; J. P. Isherwood, Blyth; T. Kilburn, Warkworth; and E. R. Gibson, Seaham Harbour, Hon. Sec. Visitors: Prof. Dewar, Edinburgh; Profs. Gilchrist and Meek, Agricultural Section, Durham College of Science; J. W. Brittlebank of the Public Health Department, Manchester; Dr. Robson, Alnwick; Councillor Baty, Newcastle; W. Bell, Ratcheugh; J. Sargeant, T. Harper, Newcastle; F. Pickering, Hexham; F. Richardson, Rainton.

Letters of apology for non-attendance were received from Prof. Williams, Dr. De Jong, W. B. Nisbet, D. McGregor, and Dr. Armstrong.

The minutes of previous meeting were taken as read and adopted.

A letter was read from the Secretary of the Sanitary Institute asking the Association to appoint a delegate to the annual Congress to be held in Bradford. The matter was left over until next meeting.

Mr. T. Parker, M.R.C.V.S, Newcastle-on-Tyne, was elected a member of the Association.

Messrs. T. Harper, Newcastle; J. Dixon, Blaydon; and F. Pickering, Hexham; were nominated as members of the Association.

The balance sheet was read by the Secretary and adopted.

PRESIDENTIAL ADDRESS

By George Craik, M.R.C.V.S., Alnwick.

Gentlemen,—I have to thank you for the kind and unanimous manner in which you elected me as President of this Association a few weeks ago, and in taking up the duties of the office I shall endeavour as far as I can and with your assistance, to further the interests of the Society and hand it over to my successor in the same healthy condition in which I now find it.

I believe it is customary on an occasion like this to give a *resumé* of the history of the profession, or to indulge in prophetic schemes, but I am unable to do justice to either. There are, however, one or two matters which I would like to touch upon, and which affect us all as veterinary surgeons.

During last year we witnessed the successful termination of a great war in which our country was engaged. Towards this success we may flatter ourselves that our profession contributed in no small degree. It was only by the mobility of our troops that we were able to wear down the enemy and this was effected by the large number of horses and mules gathered together and superintended by veterinary surgeons. We saw the permanent staff undermanned, but civilians were at once forthcoming to assist. I am sorry to see that the red tape of the War Office acknowledges these services by still adding a prefix to our title and denying our members the privileges of all other commissioned officers, whether combatant or non-combatant.

We have during the past year had under discussion the possibility of having our profession represented in the House of Common by one of our members. Unfortunately the Royal College of Veterinary Surgeons did not support the proposal. No doubt the Council of this body found many difficulties in the way of carrying out such a scheme, but I think it could be done, and I am satisfied that we won't get the attention we deserve from Government until we are directly represented in Parliament by some person able to air our views and to claim our deserts.

I should like to take notice of our relation to public health. In Scotland we have seen the Public Health Bill become law, with the result that qualified veterinary surgeons have equal powers with medical officers and sanitary inspectors. No such Act applies to England although it is worthy of note that several of our large Corporations within the last few years have appointed veterinary surgeons to act with their medical officers in inspection of food, in inquiring into the sanitary condition of stables, byres, slaughterhouses etc. I hope we will soon see every town and every country district having an appointed veterinary inspector. Our education and training qualifies us for such posts, and that it would conduce to a better state of public health, no one will attempt to deny.

Again, the Council ought, in my opinion, to make a more vigorous attempt to get the fees of veterinary surgeons increased, when giving evidence in a Court of Law. We are at present rewarded with the sum of half-a-guinea after having been obliged to spend the whole day either in the court or its precincts and given expert evidence in a case, and, further, however necessary our presence is at home we are unable to be there. Surely such a fee is a poor acknowledgment of our services.

We still await the decision of our experts on the communicability of bovine tuberculosis to man. We all remember how, nearly two years ago, Prof. Robert Koch astonished the world and caused a sensation by declaring that, in his opinion, tuberculosis in man seldom had its origin in milk and meat, and that there was little to be feared from these sources. Royal Commissions have been appointed, private experiments have been and are being carried out, and we still await with bated breath the result of such enquiry.

The question of the communicability of bovine tuberculosis to man will not admit of absolute decision to-day, or to morrow, and although it is quite true that by far the largest percentage of cases of tuberculosis in the human subject is communicated from man to man, yet until it is proved that man cannot be infected or otherwise injuriously affected by tuberculous milk or meat, we are bound as veterinary surgeons to continue to take every precaution against the danger.

We have again seen this county cleared of the ravages of foot-and-mouth disease, thanks to the advisers of the Board of Agriculture and the local veterinary inspectors.

As a result, we are free to send cattle abroad and also to have fat cattle imported to this country for slaughter. It is still an open question, however, whether we do not run great risks in allowing these cattle to land in this country, even for immediate slaughter, until we have appointed veterinary inspectors at the ports of the country from which they are brought. These inspectors will also have a knowledge of the disease existing in the particular country. Until we have such inspectors appointed, I maintain that our present system of inspection is not sufficient to save us from another outbreak of disease. We still have a few contagious diseases which, like the poor, seem to be always with us.

Anthrax still appears amongst our flocks, and the number of its victims does not appear to appreciably diminish.

Glanders, although confined to a few centres only, cannot be said to be decreasing, while swine fever, notwithstanding the different methods employed for its suppression, is still far from disappearing. Surely the measures adopted to eradicate cattle plague, foot-and-mouth disease, and pleuro-pneumonia, if applied as vigorously as before, ought to work the same result.

In conclusion, I feel I have been treading over old ground and indulging in the easy occupation of a grumbler, but although we have grievances yet there are bright spots on our horizon. We have a healthy occupation, and what can be more ennobling than the part we play in alleviating the pain of the dumb animals. Year by year our social standing is raised, and we have the satisfaction of knowing that our services are better appreciated, while our members are able to take their proper place in the world of science. We can still attain to higher results if we are true to ourselves and work together for the common good.

VETERINARY INSPECTION AND THE MILK SUPPLY.

By J. W. Brittlebank, M.R.C.V.S.

Veterinary Surgeon to the Public Health Department of Manchester Corporation.

Mr. President and Gentlemen,—Last September, when Mr. Gibson, your worthy Secretary, asked me to read a paper before this meeting, I told him that I thought a subject like mine would not be of so much interest to a gathering of gentlemen in general practice as some good practical paper upon a condition commonly met with in general practice. He, however, insisted, so what could I say? However, I trust that some few matters of interest may arise for discussion. Indeed, on thinking the matter over I came to think that perhaps the subject was of more importance than I thought, for after all, one of our greatest privileges as veterinary surgeons is to be of use in assisting to eradicate or at any rate decrease the communication of disease from animal to man, and from animal to animal, and under these headings the veterinary inspector will find ample scope.

In connection with the milk supply one great feature must always be pre-eminent, namely, that milk is the chief diet of infants and young children. In connection with the point we must remember that far more children are now fed artificially than was formerly the case—in some classes of life this, no doubt is due to the shirking of the duties of motherhood; but in the class of life upon whom the struggle for existence tells most forcibly we find that it is a matter of necessity, the mother having to go to work and leave the child or children to be attended to by others.

One cannot help but be struck by the great infantile mortality from epidemic diarrhœa, and in the investigations into these cases it is found that a great percentage are hand-fed with either fresh or condensed milk. I may mention that condensed milk has been found to contain plenty of bacteria, and often a certain amount of dirt, and it is only natural that milk should be looked upon as a suspected source of infection, in fact we have considerable evidence of a positive character on the point.

In addition, I need not tell you that milk may be the medium of conveying such diseases as Enteric Fever, Diphtheria, Scarlet Fever, etc. It is surely evident that rigorous inspection of all milking herds, and the conditions under which milk is produced is a vital necessity.

But I must not enlarge too much on this aspect as my paper is headed veterinary inspection and the milk supply, and I propose to deal with it somewhat superficially under two headings:—

(1) The milk supply from sources within the municipal boundaries.
(2) Milk supply from the country.

The Milk Supply in the Town.

For some years endeavours have been made to improve the condition under which cattle are housed in our cities and large centres of population; these efforts are still going on, and are to a great extent successful. In Manchester a large number of insanitary shippons have been closed, and others have been altered to conform to the regulations, which, briefly, require provision of 600 cubic feet per cow in the reconstructed building and 800 cubic feet in new buildings. Other conditions, such as sufficient light, ventilation, drainage, and impervious floors are also provided for. I might say that in Manchester we do all we can to assist in the necessary reconstruction by providing plans and specifications; these are usually adopted, and it is surprising how much can be done in the way of reconstruction at slight cost. I here submit for your notice some plans prepared for me by Inspector Hyslop of the Sanitary Department. You will notice that single stalls are provided for, and also various other provisions, such as water *in* the cowsheds for cleansing purposes. We pay considerable attention to the floor space by the arrangement as shown.

I do not intend, however, to enlarge upon the conditions of housing within the city. I might say that the cows are regularly inspected, both by the district Sanitary Inspectors and myself. The strictest cleanliness is enforced, both of the milkers and of the cattle—this latter has been a subject of considerable discontent on the part of the cowkeepers, who are bound down and around by old habits and customs, which are very difficult to eradicate, and it is only by the most constant and vigilant supervision and inspection that a satisfactory state of cleanliness is obtained.

The class of cattle found in the town shippons are on the whole good, and are well fed and in good condition, as it is usually the practice to keep the cows in good condition so that when they go dry no unnecessary time is lost in feeding for the butcher. On the whole the class of cattle in the town shippons are, in my opinion, better than those in the country. This is, I think, merely the result of a process of selection.

Where new buildings have been put up and a full 800 cubic feet per cow is obtained, it might be at first thought that the buildings would be cold after the 200 or 300 cubic feet the cattle had previously been used to. The whole thing to my mind resolves itself into a question of *efficient* ventilation, that is to say, a free flow of air without causing draught; this, I think, is best attained by ventilating as I have shown in the plan submitted. I find this method to be most satisfactory and even the cowsheds situated in most exposed positions are free from draught.

Milk Supply from the Country Farms.

The Corporation of Manchester some few years ago, being advised by the Medical officer of Health of the

large number of tuberculous milks coming into the city, went to Parliament and obtained special powers; the section of the Act being known as "Milk Clauses" of the Manchester General Powers Act (1899). Briefly the Act makes tuberculosis of the udder a disease notifiable by the farmer to the medical Officer of Health, and I may say it has almost entirely failed in so far as obtaining notification.

We, however, deal with it in another way. A large number of samples are taken from the milk cans at the various railway stations by the Food and Drug Inspectors, and these are submitted to Professor Delépine who submits them to the inoculation test. When he reports that a certain sample of milk has been found to cause tuberculosis I proceed to the farm accompanied by either the Medical Officer or his representative. Before going to the farm I have also to obtain an order from a Justice of the Peace.

The cattle are then inspected, the udders carefully examined, and further samples of milk taken from suspicious udders, these samples are again submitted to the inoculation test. In the taking of these special samples care is necessary to prevent external contamination of the milk by dirt, etc. I think we may take it for an almost universally accepted fact that tubercle bacilli will not be present in milk unless the udder is diseased.

With regard to the diagnosis of tuberculosis of the udder, the greatest care is necessary in expressing an opinion, and that should always be a guarded one, subject to confirmation by the bacteriological examination of milk. If I were asked to define the symptoms of tuberculosis of the udder I would say that any condition other than the normal *may* be tubercular. Then, again, no satisfactory examination can be made if the udder is full of milk. Of course in some cases the disease is well marked and easily found, that is to say, the diseased quarter may be indurated and hypertrophied—rarely atrophied; occasionally all that one can see is that the quarter is somewhat hypertrophied but with no apparent induration.

The history of the condition found as given by the farmer I usually find to be entirely useless. In the most marked cases he will tell you "the cow caught a bit of cold in that quarter about a week ago." Probably you are quite satisfied that the induration and hypertrophy is the result of months; the wise man says nothing—but, like the parrot, thinks a lot.

Occasionally the general condition of the cow is excellent, but I find that it is a very useful practice to go round the animals take a casual inspection before proceeding; often you find a cow about which all that is evident is some indefinable symptoms that all is not well, and this eventually proves to be the animal you are after. You may take this last impression of mine for what it is worth, but I find it useful.

Let me here again reiterate what I have already said that it is an extremely difficult thing to say that an udder is or is not tuberculous until the milk has been bacteriologically examined. A mere microscopic examination is not sufficient, the milk should be always submitted to the inoculation test.

When the result of the inoculation test of the special samples comes to hand, the result is communicated by the Medical Officer of Health to the farmer and to the Medical Officers of Health to the district and county.

It is as a rule wise to take a control sample to see whether you have succeeded in finding the whole source of infection—that is to say to make certain that you have not missed a case.

If a particular cow is found to be suffering from tuberculosis of the udder the farmer is asked to slaughter the cow—not immediately, but at his own convenience—in my presence. If he consents the carcase is inspected in accordance with the conditions laid down by the Local Government Board and the case is finished with. If the case was a well marked one, one which I think the farmer could not possibly have missed—he is liable to prosecution for failing to notify.

Now as to the general conditions at the farm. I almost invariably find that the cowsheds are dark, dirty, ill-ventilated, badly drained or not drained at all, and overcrowded. The cattle are in a very large number of cases filthy, their quarters are plastered up with dung, the accumulation of weeks; their udders are likewise dirty.

I must confess that from the point of view of the milk supply the existent conditions are disgusting, and even if there were no ill effects to be derived from these conditions, surely such an important element in the food supply should be produced under better conditions than those I have described. I do not wish you to look upon my remarks as those of an extremist, for I can assure you I am not exaggerating the facts. In many of the cowsheds which I go into there is absolutely no light except that entering when the door is open. Ventilation is a thing unknown—even in those places where some rudimentary provision has been made in the shape of openings they are blocked up—the edges of the door are carefully surrounded by strips of sacking, or inside the door is heaped some manure. All this with the idea that the cow must be kept in a most unnatural state of heat to increase the quantity of milk. Can we be surprised that this disease, tuberculosis, is rampant in our herds? Surely it is a short sighted policy to make the cow into nothing more nor less than a machine—to be pumped for all she is worth and at the same time breed on and produce our future stock. One of the points that strike the observer is what a tremendous amount of resistance to disease the animals must possess considering the conditions under which they live.

I occasionally come across a farmer endowed with common sense enough to know that if he is content to take an average supply of milk from his cows he will be repaid in the long run, but really the prejudice against sanitary reform seems to me to be too deeply ingrained to eradicate except by educating the rising generations.

Then, again, How are our milking cows fed? A multiplicity of foodstuffs may be used, and to my mind all are good in their way. One type of individual I think most of us have met with is the farmer who gives all his cows the same meal; giving the small milker the same amount as the cow who is a naturally heavy milker. I believe in a good meal for cows, but do not think that, provided the cows are healthy and well nourished, the feeding has a great amount of influence upon the milk. There may be some, but I am afraid it is infinitesimal, and milk-producing cannot be reduced to the mathematical nicety. There are some people who would have us believe that the feeding of a milch cow can be reduced to an exactitude—merely a case of giving proportionate amount of the different necessary elements to produce a given quality of milk—this I do not believe. I think the successful dairyman is he who individualises his cows, if I may so use the term, and studies the requirements of each.

I think the property of producing a good rich milk is an inherent physiological process, highly developed in some strains of particular breeds; such strains should be carefully fostered and the young stock well fed and not put to the duties of maternity too early. I am of opinion that the almost continuous state of pregnancy in which our milking cows are is to some extent a predisposing cause to tuberculosis.

Now, gentlemen, under the conditions which I have described we are expected to obtain a good supply of pure, *clean*, milk from a healthy herd. I ask you in the name of common sense, Is it possible that we can get milk which is fit for human consumption? You know

that the public, when they pay their 3d., 3½d., and 4d. per quart for milk, expect to get pure milk—and not milk *plus* dirt and occasionally *plus* tuberculosis. And it is our duty to see that they *do get* such an article.

A few moments ago I made use of the expression "pure, clean milk." How many of us have seen clean milk? I myself must confess that although I have the opportunity to see perhaps as much as most people, I very rarely see any. Take an ordinary can of milk and gently pour it off into another vessel so as not to disturb the sediment, and you will find evidence enough to satisfy anybody that the milk is dirty; and this sediment will only be a fractional part of the dirt in that milk.

So much for the cattle and cowsheds; but our work is not yet done. At every farm it is the custom to refrigerate the milk before despatching it to its destination. You are all doubtless familiar with the common type of refrigerator used—a long irregular tube through which water runs, and the milk runs down outside. This apparatus is set up usually in a small wooden shed, quite open to additional infection in the shape of dust which may be blown in during the cooling process. At many farms I find this building is also used as a washhouse in which the family clothes are washed.

Lastly, I come to what is, I consider, a very important, point in the inspection, namely, the water supply. I need not describe the various methods of watering animals, and in connection with the animals themselves need only say how necessary it is that the water supply be good. There is, however, another and more serious aspect of this portion of inspection, that is the water which is used in washing out the milk-cans and other appliances. We all know what a splendid medium milk is for the growth of certain bacteria, and how in a very short period of time they may reproduce to the enormous extent of which only bacteria are capable. In the cases of ptomaine poisoning which occurred at Derby, it was found that the cause of the trouble was bacilli of the colon group and by which the meat of the pies were infected during the process of manufacture, the source of infection being probably an adjacent closet. Now, bacilli of this group are very often present in milk, and may be derived from many sources. One of these sources may be a polluted water supply used for cleaning purposes.

In a recent case a report was received from Professor Delépine saying that the guinea pigs inoculated had died three days after inoculation of acute septic infection. I visited the farm and examined the cattle and cowsheds: they were certainly not clean, but they were no worse than hundreds of others, so I thought I must look elsewhere. Immediately outside the cowshed was a large unformed middenstead and at a distance of 12 yards a pump well from which the house was supplied, and this water was used for washing out the cans after they had been steamed. I took a sample of the water and submitted it to Mr. Estcourt, City Analyst, who reported that the water was so polluted with organic matter of animal origin as to be totally unfit for any purpose. I then visited the farm and took another sample which was submitted to Professor Delépine.

Here let me quote an extract from a paper read by Professor Delépine before the Epidemiological Society last December. He says:—

"I have found a close resemblance between the lesions produced in the guinea pigs by the inoculation of milk which had given rise to limited outbreaks of summer diarrhœa and that produced in the same kind of animals by the injection of many samples of mixed milk obtained on the market.

In both cases I have very frequently isolated from the blood and local lesions of acutely infected guinea-pigs bacilli belonging to the colon bacillus group. These bacilli were often the only organisms found, especially when the animals were killed before the termination of their illness.

In about 90 per cent of the cases of fatal septicæmia due to milk inoculations of guinea-pigs, I have been able to isolate from blood bacilli resembling closely, or identical with, those obtained twice from milk causing intense diarrhœa in children and adults. They have a similar resemblance to bacilli which I have isolated from the organs of patients sufferring from *cholera nostras* of doubtful origin, and from the organs of patients suffering clearly from food poisoning. These microbes retain their virulent properties even after being cultivated for several generations outside the body. They multiply with extraordinary rapidity at summer temperature. They resemble the bacillus coli communis or the bacilli of the colon group in their pathogenic action, their mode of growth on gelatine, agar, potato, milk, lactose sugar, glucose gelatine, and in size, shape and motility, allowance being made for the variability of the bacilli of this group."

This extract speaks for itself, and I leave it to you.

Now, I would like to say a few words about the amount of tuberculosis there is among our cattle. We have in the British Isles about 12,000,000 head of cattle. Tuberculosis is rampant among them throughout the country, and nothing is being done; the old insanitary conditions still exist.

The theory that was at one time universally accepted was that tuberculosis was an hereditary disease. Prof. Bang, of Copenhagen, has proved that to be incorrect, as the result of Dr. Koch's valuable work we now know the precise cause of the disease, namely, the tubercle bacillus, and we also know that tuberculosis is a contagious disease—and yet, I repeat, nothing is done.

Is this as it should be? Here in one of Britain's greatest assets this disease is being propagated, the Board of Agriculture are not interested in the subject, it does not concern the fisheries.

We are also, I am afraid, as a profession, very apathetic; we are quite willing to do anything when someone else has agitated that it should be done. We run in narrow grooves from which it behoves us to get out, or we shall be left.

We know very well that the prevalence of this disease can be to a very large extent reduced, but we say to ourselves, "What does it matter"—possibly we do not say it aloud.

We are wise. We tell our client to only breed from good healthy stock, but what is the use of putting good stock into buildings which must be chock full of infection.

The researches of Cornet and Cate, of Coalts, have shown us that the great danger of infection in human phthisis is the expectoration. Do not the same conditions hold good with our animals? They probably do not spit about the place, but on the other hand swallow the sputum. This passes through the bowels and so the bacilli are liberated, only waiting to be allowed to dry to find a fresh host.

Gentlemen, if we do anything we must start at the beginning and put up good sanitary buildings and give the animals a chance of remaining healthy.

I may be asked, Will not these buildings become infected? Certainly they may, but to nothing like the same extent as the old ones, and, moreover, a 1 per cent. solution of chloride of lime is a very potent disinfectant with which new buildings could be easily disinfected.

I will give you the experience of a large practical farmer who made up his mind to have a herd as near free from tuberculosis as possible. He had a large herd, about 120; these he had tested; with the result that 80 per cent reacted. However, he thought, this will not occur again; so persevered and got rid of the 80 per cent of reactors. Six months later they were again tested; this time he did not have 80 per cent, but the 20 per cent which remained healthy at last test now reacted.

This sort of thing went on for some time; he was most

careful in getting rid of every reacting cow, but made no progress; ultimately he was advised to pull down his old buildings and have new buildings sanitarily satisfactory. This he did and now he has not more than 6 or 7 per cent reactors per annum. I can speak personally on this point as I test his cows myself.

I consider that it is quite time that there was a Veterinary Health Service throughout the country on the same lines as the Public Health Service which is now existent for medical men. The Veterinary Officers of Health would find plenty of work, and the work would then be decentralised, which, I think, would ensure prompt attention and efficiency.

It is surely an insult to us that a farmer, when he finds he has pig ill, should go for the village "Bobby" to come and see it, and obtain the opinion of that sapient individual.

What the medical profession would do if a case of infectious disease had to be notified to the police, and not to the Medical Officer of Heaith as at present, there is little doubt.

In conclusion, Mr. President and gentlemen, I beg to thank you for the kindly way in which you have listened to me, and hope that you will not hesitate to criticise my remarks freely.

The essayist was listened to with great interest by all present, and an animated discussion followed, the following gentlemen taking part:—Prof. Dewar, Prof. Meek, Dr. Robson, W. Hunter, G. R. Dudgeon, W. Davidson, H. S. Elphick and G. Craik.

Mr. BRITTLEBANK having replied, he was accorded a hearty vote of thanks for his paper, and the meeting concluded.

THE ANNUAL DINNER.

In the evening the annual dinner of the association took place, Mr. George Craik again presiding. After justice had been done to a capital repast, the loyal toasts were appropriately honoured, and Mr. G. R. Dudgeon proposed "The Navy and Imperial Forces."

Major Elphick, in the course of his reply, remarked that the Army Veterinary Department was being sadly neglected. When they thought of the amount expended during the recent war on remounts, and the small number of veterinary surgeons employed it became evident that there was a great want somewhere. However, he thought that the Government would realise the value of the veterinary surgeon in conducting future campaigns.

Professor Gilchrist, in felicitous terms, submitted "The Royal College of Veterinary Surgeons."

Professor Dewar, replying, said the Commission on the Army Veterinary Department had nearly completed their work, and there was good reason to believe that the position of the army veterinary surgeon would be considerably improved as the result of it.

"Our Visitors" was the next toast, Mr. W. Hunter being the proposer. Dr. R. B. Robson, Councillor Baty, and Professor Meek responded.

Councillor Baty said he did not know any town in the country having such a large market as Newcastle, which had kept so free of disease. He advocated the delivery of lectures to butchers on veterinary subjects.

The concluding toast, "The North of England V.M. Association," was proposed by Mr. J. W. Brittlebank and responded to by the President.

Physalix Distemper Vaccine Experiments.

The following additional amounts have been received:

J. Murray Stuart, M.R.C.VS.,	£1	1	0
E. H. Leach, F.R.C.V.S.	1	1	0
J. T. King, M.R.C.V.S.	1	1	0
T. G. Sherwood, M.R.C.V.S., New York	5	0	0

SCREW WORMS IN ST. LUCIA.

By St. GEORGE GRAY, B.A., M.B., B.Ch. Dub., Colonial Assistant Surgeon, Castries, St. Lucia.

The screw-worm, which is the larval form of a small fly—*Chrysomyia* (*compsomyia*) *macellaria*, Fabr.—is one of the most important of all the insects that affect domestic animals in the New World. It does not confine its attentions, however, to the lower animals, for not infrequently it attacks man, and sometimes fatally. Its area of distribution is very wide, the species having been found in nearly all parts of America, from Patagonia to Canada, but it does the most damage within the tropical and subtropical belt.

I have seen numerous instances of its ravages in cattle, etc., chiefly in the navels of young calves and in barbed wire injuries. Not long ago I saw a goat with a cavity in its thigh caused by these worms into which I could have put my hand. Within the last few months I have seen several cases of screw-worm in man. These I shall briefly describe:

Case I occurred in a young woman who was admitted to the Victoria Hospital, St. Lucia, with a sloughing ulcer on her upper lip. This spread rapidly, but was finally controlled by the application of pure formalin. Before the ulcer had healed, however, a large number of screw-worms were discovered in the nose. These were removed by injections of a dilute solution of izal, and the patient recovered with the loss of the greater part of the upper lip and of the septum nasi.

Case II.—A man had his left hand and forearm amputated for malignant disease, which reappeared later in the axillary lymphatics. The affected glands broke down, leaving a large abscess cavity which was soon found to be swarming with screw-worms. As in the first case, these were removed by the dilute izal injections. But the patient succumbed to his original disease, dying of exhaustion several weeks later.

Case III.—A young woman suffering from phthisis with diarrhœa. This patient used to throw off the bed clothes when sleeping, and one morning she found a worm in her bed. I examined her, and removed forty-six screw worms from her vagina and rectum. There was no wound and the patient seemed none the worse for her experience, but she is now more careful to keep herself covered while sleeping. This patient has since died of phthisis.

Case IV. was a woman with advanced phthisis. There was an offensive discharge from the nose, which afterwards became bloody, and then numerous screw-worms crawled out of the nostrils and mouth. I put five of these into a bottle with some earth, and twelve days later bred out five large flies similar to the flies which I had found attacking cattle, but many times larger. Dilute creolin injections soon removed the worms, and the patient improved somewhat, but her case was hopeless from the beginning, and she died just ten days after the last worm had been removed.

Case V.—A man, about 50 years of age, received some slight injury to his left great toe. This was treated with *remède Créole*, which probably consisted of a mixture of various herbs, leaves, etc., boiled down with tallow, whale oil, and perhaps a little cow dung, and other ingredients. The result was a fetid ulcer, which soon became infested with screw-worms. On my first visit to him I removed twenty-two of the worms. I did not see him again for five days—he lived several miles in the country—and then found that my directions had not been carried out. The creolin lotion had simply been applied on a piece of rag without any attempt at cleaning the sore, which had now become a large suppurating cavity, in which I could still see a few worms moving. The end of the toe was gangrenous, and when I cut through a small bridge of skin in order to get at the worms at the bottom of the

cavity, the ungual phalanx almost dropped off, the last joint of the toe being attached by a strip of skin only. I cut through this, and removed the gangrenous part at once, and brought the patient to hospital, where I removed the other phalanx and scraped out the cavity with a sharp spoon. At the time of my second visit I took away all the worms that remained. In all sixty-seven worms were removed from this man's toe. The phalanges of the toe were completely destroyed, the bones being so rotten that they crumbled away when I attempted to seize them with forceps. This man is still under treatment and doing well, but, owing to the septic nature of the case and the great destruction of tissue his progress towards recovery is necessarily slow.

The fly which causes all this mischief is a small species, less than ½ inch in length, although it varies considerably in size. The body is of a bluish-green (see below) colour, with metallic reflections, and covered with stiff black hairs. It is distinguished from other flies which are related to it by the presence of three longitudinal black stripes on the thorax. The head and eyes are of a brick-red or yellowish colour during life, but after death the eyes become darker.

In depositing its eggs it selects some wound or decaying matter, and lays a mass of eggs at once. I find them a great nuisance when I have to make a necropsy in the country, especially if the body is at all offensive, as it frequency is in the tropics. It is said [1] that at least three or four hundred eggs may be deposited by a single female within a very few moments, and that the same fly may oviposit at different times and in different places hundreds or even thousands of eggs. I think this an exaggeration. I have never seen as many as one hundred larvæ in any one case.

The eggs are cylindrical like those of other flies, about one millimetre in length, and white. "Under the microscope the eggs show prominent ridge on one side" (Weed). They hatch within from one to nine hours.

The larvæ are whitish, footless, rather slender maggots, and quite active. They are composed of twelve segments, each with a ring of minute spines or bristles, giving the worm the appearance of a screw. They burrow into the tissues of the affected animal, or into the mass of putrid flesh or decaying matter that furnishes them food, devouring everything that comes in the way, even the bones (Case v), and, when they attack the head (nose, ear, or scalp), may penetrate to the cranial cavity and cause death. They grow rapidly, and mature in a week or less. When mature they escape from the wound or decaying mass in which they have developed, and bury themselves in the ground, or hide in crevices, bedding, etc., to transform.

The pupæ are brown in colour, cylindrical, and rounded at the ends. The length of time passed in the pupa stage varies from nine to twelve days.

When freshly hatched the flies are brown, but after a very short exposure to the air they become blue or green. (See above). All of those that I bred from larvæ were blue, and all of those that I caught in the open were green. I killed and pinned all my flies without giving them a meal, so it is possible that the blue ones would have changed to green had they been fed.

I venture to suggest that the size of the adult fly depends upon the stage of growth that the larva has reached within the wound or sore before passing to the pupa stage. In Case IV the existence of screw-worms was not suspected until the full-grown larvæ began to drop out of the patient's nose and mouth. These were quite large and fat, and the flies which were bred from them were nearly if not quite half an inch long. In Case V, on the contrary, the worms were discovered and removed when only half grown, and the flies bred from them were hardly, if at all, larger than ordinary house flies.

Owing to the immense area of its distribution (about half the New World) and to the nature of its ravages, it would be Utopian to expect that any remedial measures that could be devised would be successful in stamping out this pest; but much could be done to lessen the damage caused by it. Attention should be paid to the destruction of all kinds of filth, carcasses, etc., particularly in the country, and to the prevention of wounds, barbed wire scratches, and especially the punctures of tick, which, according to Weed and Francis, furnish the greatest number of cases in cattle.

The fatal cases in man are due to the deposition of eggs, mainly in the nostrils, sometimes in the mouth, and such deposition is most liable to occur to persons sleeping in the open air or to those suffering from catarrh. The evident precaution is to avoid these sources of danger by the use of mosquito netting or wire gauze for sleeping rooms, and of a protection for the nostrils when exposed in places where the flies are common." [2]

All wounds, ulcers, etc., should be covered with a suitable dressing, and care should be taken that flies do not have access to the sore while the dressing is being changed.

As a direct application for the sores infested with worms a wash of carbolic acid [3] or creolin is advised. After the worms have been killed and removed the sore may be dressed in whatever manner the medical attendant may think necessary. For cattle a final dressing of pine tar, or in deep sores a packing with oakum and coating with tar is recommended.—*B.M.J.*

1, 2, 3.—*Bulletin*, No. 5, New Series, U.S. Department of Agriculture, Division of Entomology, p. 131, *et seq.*

THE CRUELTY TO ANIMALS BILL.

The Bill is intended to amend the Act of 1876, and is introduced by Sir Frederick Banbury and backed by Colonel Lockwood and Mr. MacNeill. It consists of fourteen clauses and a schedule of form of report as to experiment. The third clause deals with general restrictions as to the performance of painful experiments on animals, and runs as follows:

"The performance upon any living animal of an experiment calculated to give pain shall be subject to the following restrictions, that is to say:

1. The experiment must be performed with a view to the advancement by new discovery of physiological knowledge, or of knowledge which will be useful for saving or prolonging life, or alleviating suffering;
2. The experiment must be performed by a person holding such licence from the Secretary of State as is in this Act as amended by the Cruelty to Animals Act, 1902, mentioned;
3. The animal must, prior to the commencement, and thenceforth during the whole course of the experiment be under the influence of a general anæsthetic of the nature of a respirable drug or gas, such as chloroform, or ether, or alcohol, chloroform and ether combined, of sufficient power to prevent the animal feeling pain;
4. The animal must be killed while it is so under the influence of such general anæsthetic as aforesaid, and before it recovers therefrom sufficiently to feel pain;
5. The experiment shall not be performed as an illustration of lectures in any medical or surgical school, hospital, college, or elsewhere;
6. The experiment shall not be performed for the purpose of attaining manual skill;
7. The substance known as curare shall not be used or administered for the purpose of or during the experiment;
8. There shall be present during and throughout the whole course of the experiment an inspector appointed under the provisions of this Act as amended by the

Cruelty to Animals Act, 1902, for the purpose of ensuring that the provisions of this Act and the Cruelty to Animals Act, 1902, are fulfilled, and no such experiment shall at any time be performed or continued save in the presence of such inspector as aforesaid :

Provided that subsections 3, 4, and 8 of this section shall not apply to an experiment not calculated to give pain from the act or operation by means of which the experiment is initiated ; and in lieu of such subsections the following provisions of this sections shall apply to such experiment as last aforesaid, if and whenever and in so far as it shall give pain to the animal at any stage of the experiment.

(*a*) Directly the animal begins to feel pain it must be placed, and thenceforth while it suffers or is likely to suffer must be kept, under the influence of a general anæsthetic of the nature of a respirable drug or gas, such as chloroform or ether, or alcohol, chloroform and ether combined, of sufficient power to prevent the animal feeling pain ; or, if the animal is not so placed and kept under the influence of such anæsthetic as aforesaid, it must be forthwith killed.

(*b*) For the purpose of ensuring that the provisions of the principal Act as amended by this Act are fulfilled an inspector appointed thereunder shall from time to time visit all places where an animal is being experimented on by a method or methods not calculated to give pain from the act or operation by which the experiment is initiated.

Clause 4 proposes that "there shall not be applied to the eye of an animal by way of experiment any matter or substance for the purpose of absorption through the conjunctival membrane." By Clause 5, Section iv. and v. of the Act of 1876 are to be repealed. Clause 6 proposes to omit from Section 7 of the Act of 1876 the portion beginning with the words "provided that every place" down to the end of the section. Clause 7 proposes to substitute for Section viii. of the existing Act the following :

The Secretary of State may licence any person whom he may think qualified to hold a licence to perform, subject to the restrictions aforesaid, experiments upon living animals calculated to give pain, provided that—

(1) No licence granted hereunder shall authorise the performance of more than one experiment to be specified in such licence, or one series of not more than six connected and consecutive experiments of a nature to be so specified ;

(2) Every licence granted hereunder shall specify the time and place at which the experiment or series of experiments is or are to be performed, and shall also state whether the licensee is licensed to perform experiments under Section iv. of this Act. and whether such experiments as last aforesaid are licensed alone or in conjunction with any other experiment or experiments ;

(3) A licence granted hereunder may be revoked or suspended at any time by the Secretary of State if he shall think fit.

Section ix. of the old Act is to be replaced by Clause 8 of the Bill which reads :

The Secretary of State shall direct every licensee performing an experiment to make forthwith a detailed chronological report to him in writing of the description, course, and result of the experiment. Such report shall be made in a form in accordance with the form of report in the schedule annexed to the Cruelty to Animals Act, 1902, with such variations as circumstances may require, and it shall be transmitted to the Secretary of State within seven days after the completion of each experiment.

Clause 9 of the Bill is as follows

Three copies of every such licence as aforesaid granted by, and three copies of every such report as aforesaid made to the Secretary of State shall be filed, and shall forthwith after the grant or receipt thereof respectively by the Secretary of State be deposited respectively in the Library of the House of Lords, in the Library of the House of Commons, and in such place accessible to the public as the Secretary of State may determine ; and any person shall, subject to such regulations as may be prescribed, be entitled at all reasonable times to search the files of the copies of such licences and reports deposited in the last mentioned place upon payment of one shilling, or such other fee as may be prescribed.

As regards inspection, the Bill proposes to replace Section x of the Act by the following Clause :

The Secretary of State shall, with the assent of the Treasury as to number, appoint a sufficient number of inspectors to carry out the provisions of this Act as amended by the Cruelty to Animals Act, 1902, or he may from time to time assign the duties of any such inspectors, either permanently or temporarily, to such officers in the employment of the Government who may be willing to accept the same, as he may think fit.—*The British Medical Journal.*

HORSE-BREEDING IN INDIA.

The Government Proposals.

Coming to the details of the Government proposals for the organisation of a combined Breeding and Remount Department, it is recommended that the Director of the Remount Department will continue to control all depôts and farms for the acclimatising and rearing of remounts, and any at which it may hereafter be be decided to introduce State breeding. In addition to this work, and to the purchase of remounts, it will be the duty of the Department to watch and encourage, as far as may be possible, and control the operations of private breeders. Certain officers will be appointed to the Department for this purpose, who will be limited as to their operations to those districts where horse and mule-breeding flourishes, and to those districts alone will imperial stallions be alloted. For the present five officers will suffice, to each of whom will be alloted a circle comprising some three or four civil districts. Within their circles the officers will control all State-aided breeding horses or mules, whether with Government or district stallions. The work of the Civil Veterinary Department will in those areas be confined solely to questions connected with cattle. But in no other districts of India will the Horse-Breeding Department be concerned. Outside the circles named the Civil Veterinary Department will, as heretofore, control breeding operations of every sort. The Department will comprise a Director, first superintendent (lieutenant-colonel), second, third, and fourth superintendents (majors), two superintendents of young stock runs (captains), five circle officers (captains), and three probationers (lieutenants). The Veterinary Staff will comprise one staff veterinary officer (a captain), four officers (veterinary-captains), and two officers (veterinary-lieutenants). In order to give circle officers a recognised position in the eyes of native breeders, it is proposed that they be taken on the executive staff of the province, with the status of Assistant Commissioners.

The Secretary of State, in a despatch, has accepted the proposals of the Government of India that are based on the recommendations of the Horse and Mule-Breeding Commission, which involve the removal of the control of all horse and mule-breeding operations in certain selected districts from the Civil Veterinary Department. The aim of the reorganisation is that India should be

entirely independent of the colonial market for remounts for its mounted troops, which horses, with the exception of a proportion of Arabs, the Commission hope will be bred in this country. The object, the Commission recommend, can be attained by breeding a limited number of first-class horses in Government stud farms, by controlling and supervising in a more efficient manner the breeding operations of private owners, and by the purchase of young stock at an early age and rearing them under favourable conditions on Government runs. The Government of India, in their despatch to the Secretary of State, recognised the desirability of placing all control of all operations connected with the breeding, purchase, and rearing of remounts in the hands of one subordinate department, and also acknowledge the necessity for keeping in touch with the people, and in harmonious co-operation with the civil authorities.

The Government are also of opinion that the undivided control of the Subordinate Department should be vested in a single department of the Government of India, and that that department should be a military, rather than a civil one.—*Times of India*, Feb 26.

DISEASES OF ANIMALS ACTS 1894 & 1896.

Summary of Returns, Week Ending March 28, 1903.

Period.	Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Rabies.		Swine Fever.	
	Outbreaks.	Animals Attacked.	Outbreaks.	Animals Attacked.	Outbreaks.	Animals Attacked.	Cases Confirmed. Dogs.	Cases Confirmed. Other Animals	Outbreaks.	Slaughtered as Diseased or Exposed to Infection
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Week ended March 28, 1903 ..	23	32	..	..	27	36	..	..	35	175
Corresponding week in 1902 ..	15	17	1	30	19	34	..	..	24	122
Corresponding week in 1901 ..	12	12	..	..	39	52	..	..	96	385
Corresponding week in 1900 ..	14	23	..	..	24	36	..	..	38	444
Total for 13 weeks, 1903	209	331	..	..	304	538	..	..	353	1,634
Corresponding period in 1902 ..	202	357	1	30	285	543	7	..	399	2,122
Corresponding period in 1901 ..	163	223	10	652	322	571	1	1	625	3,165
Corresponding period in 1900 ..	140	213	7	99	259	486	..	..	438	4,980

Note.—The figures for the Current Year are approximate only.

Board of Agriculture, March 31, 1903.

Death from Glanders in Glasgow.

Another matter of interest is the report by the medical officer of health of a death from glanders which occurred in the city at the end of last month. This is the first death from this disease which is known to have occurred in the city since 1892. The following are the chief facts connected with the case. The deceased was a coal dealer who conjointly with another contractor rented a stable. Cases of glanders were detected in this stable on the following dates, Dec. 31st, Jan. 10th, 17th, 19th, and 31st, and Feb. 2nd and 7th The horses which were affected on Jan. 19th and Feb. 2nd belonged to the deceased whose illness began six days after the latter date. The premonitory symptoms were of an indefinite febrile character, but on Feb. 23rd the patient presented grave symptoms, evidently the accompaniment of a severe broncho-pneumonia. Pain and œdema occurred most markedly in the right hand but to a less extent in the right knee and both ankles. Before death, which occurred on Feb. 24th, a large dark red swelling had appeared on the right side of the face, involving also the eyelids, while a pustule had begun to form over the left eye. A complete post-mortem examination was not permitted, but the city bacteriologist (Dr. R. M. Buchanan), from material obtained from the eyes, nostrils, and the pustule on the face, was able to prove by inoculation experiments and cultures that the case had undoubtedly been one of glanders. Evidently there is some doubt as to the channel of infection. It is reported that the man while at work among the infected horses had some superficial cuts, but no evidence of these was obtained on examination of the body.—*The Lancet.*

Vivisection at the Brown Institute.

Mr. Weir on Wednesday asked the Home Secretary whether, in view of the fact that the Brown Institute was founded in 1871 by means of a bequest of £20,000 for the establishment of a hospital for animals, he would ascertain under what authority a school of vivisection was now conducted at the Institute, and whether he would state how many attached to this school possess vivisection certificates, and the nature of such certificates. The Home Secretary replied that in 1877 the University of London, which is the governing body of the Brown Institute, applied to have the place registered under the Prevention of Cruelty to Animals Act, 1876, for the performance of experiments on living animals. The place was registered accordingly. Sixteen persons hold licences under the Act authorising them to perform experiments at the Institute. Fifteen of those also hold certificates under the Act, namely, eleven authorising practically painless experiments (such as inoculations) to be performed without anæsthetics, coupled in five cases with the extra certificate required for experiments on dogs and cats; and fifteen certificates authorising the animal to be kept alive after an initial operation under anæsthetics, coupled in nine cases with the extra certificate for dogs, and in one case for horses.

An Almost Extinct Breed of Oxen.

The Czar has presented to the famous Schoenbrum zoological collection in Vienna a splendid pair of Aner oxen. This rare breed, though once fairly numerous in northern Europe, is now almost extinct. The few that still survive are carefully preserved in the Imperial Russian forests at Bialovitch.—*M.T.J.*

Tubercular Disease of the Udders of Cows.

Mr. W. F. Shaw, veterinary inspector to the London County Council, has reported on his eleventh examination of all cows in the cowsheds licensed by the Council. The number of cows examined was 4027, and of these 245 are reported as having disease or abnormal conditions of the udder. Mr. Shaw found three cows affected with tubercular disease of the udder, the animals being removed for slaughter. Five cows, which showed no lesions of the disease, but which presented visible symptoms of tuberculosis, were slaughtered by the owners, and the carcase of one was condemned as unfit for human consumption and destroyed. There were thirty cows affected with mastitis of one or more quarters of the udder. These animals were kept under constant inspection until they either recovered or were removed from the sheds for slaughter. One hundred and forty cows had atrophy of one of more quarters, as compared with 103 on the occasion of the last quarterly inspection. These were for the most part wasted quarters, and yielded no milk.

ARMY VETERINARY DEPARTMENT.

Extract from *London Gazette*:

War Office, Pall Mall, March 27th.

Vet.-Lieut. Robert H. Holmes to be Vet.-Captain.

Imperial Yeomanry.—Herts.—Vet.-Capt. W. C. B. Revill resigns his Commission.

CORRESPONDENCE.

SOUTH AFRICAN RINDERPEST.

Dear Sir,

Away in seclusion a December, 1902, *Journal of Comparative Pathology* comes to hand. It tells an old story—South African Rinderpest—much as fashion decrees cattle diseases shall be recorded. Histories written to-day of a disease that rampaged five years ago are valuable—a readable book might well be written on vital points yet unconsidered! Has it yet dawned on the thinking men of the profession that the presence of Koch directing veterinary matters in South Africa can only be explained by timidity and lack of enterprise on the part of the British veterinary profession? The Colonies demand *results*. We offered stamping out. It failed. England pushed 1865 methods, Germany offered 1896 goods, and got the job. (Hold hard! one solitary exception, Watkins-Pitchford always fought for and applied modern work.) Of what use is new knowledge bound in by steel ribbed reverence for old ways? British lack of initiative lost the profession supreme direction of the mightiest system of inoculation yet carried out. We have in our ranks a man whose training and clear insight into pathological processes fit him for directing an experimental rinderpest station such as Koch had. He is, further, in close touch with the powers who dwell in the hub of the British Empire. What ailed him that he did not seize control and reap for himself and his profession success? Simply he was dead slow and did not recognise his possibilities. Thus we stagnate!

Koch follows the rule. He blurted out a false theory—all askew with the law of immunity. The Colonial, knowing facts, quietly buried Koch's reputation, then went his way seeking and demanding *results*. Fortunately the veterinarian in the veldt was well enough balanced to discard the theory of the research camp. Inoculation was successfully applied according to the law of immunity, but in total disregard of any one man's teaching. If praise must be awarded any one individual it is due Watkins-Pitchford for he had done sound work before the foreign medical men appeared. Yet the truth remains that inoculation has been evoluted by united effort.

We live in 1903 and not in 1865. Let the profession lay hold with both hands to its own affairs, push the laboratory trained veterinarian into the positions that should be his—fire out the foreign crowd. The profession has to so advertise itself that when the colonies want a laboratory man they will instinctively turn to *us*—and not to Berlin. We must show them that we are able to offer them the *best* in our line. This *plus* a little "wire pulling" will secure the head positions, and once there nothing bars the road to success but British pessimism, which the wise Britisher will promptly swap for Colonial optimism.—Yours truly,

W. Stapley,

San Dimas, California, U.S.A.
March 10th, 1903.

A CORRECT RULE?

Dear Sir,

On page 103 of Smith's Veterinary Hygiene, second edition, the rule given by which to find the area of a circle is: multiply twice the diameter by ·7854, and the calculation on page 105 to find the cubic contents of the eight pillars is evidently done by this rule. Is the rule given the correct one, or should it be as follows: multiply the square of the diameter by ·7854. This gives rise to a material difference in the answer, and I should be pleased to know which is the correct way.

If the error be in the book, I should also be pleased to learn of any others that may have been noticed, as it is rather important that one's calculations should be correct.—Yours truly,

Peter Wilson, M.R.C.V.S.

Glenmore, Lanark, March 24.

[Square of diar. × ·7854 is correct.]

AN OPPORTUNITY.

Sir,

The enclosed advertisement in a French Journal may be of some interest to your readers. Unfortunately the diploma of the Royal College of Veterinary Surgeons is not recognised in France.—Yours,

Joshua A. Nunn.

889. Un vétérinaire de grande ville cèderait sa clientèle et ses immeubles contre rente viagère à un jeune vétérinaire pouvant devenir son gendre.—Les renseignements seront donnés par l'auteur même de l'annonce.—Fille gentille, blonde, bonne éducation, très douce, très honnête, 25 ans, n'ayant pas voulu quitter son père, et par suite ayant refusé de bons partis.—Immeubles d'une valeur de 50 à 60,000 francs.

"889. A veterinary surgeon in a large town will assign his practice and fixtures for an annuity to a young veterinary surgeon who is willing to become his son-in-law. The conveyance and agreement will be delivered when the engagement is announced. The daughter is ladylike, fair, well educated, very quiet, and of a good disposition, aged 25 years, but not wishing to leave her father has refused several good offers. The fixtures are valued between 50 and 60,000 francs. — *Bulletin Veterinaire*, 15th Jan, 1903."

Communications, Books, and Papers received.—Messrs. F. Hobday, E. W. Hoare, J. R. Godbold, J. L. Barling, Col. J. A. Nunn. F. E. P.

The Sporting Times, The Cheshire Observer, The Nottingham Evening News.